

A variational approach to the semi-wave solutions of a free boundary problem with a multi-stable nonlinearity

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Abstract

The semi-wave solutions is the traveling wave solutions defined in the half spaces which exhibit many important features for the spreading dynamics for the competing species. In this talk, we give the results about semi-wave solutions coming from the free boundary problems with monostable or bistable type reaction terms. We review the phase plane methods and provide variational methods for the existence of semi-wave solutions, and the dependence of wave speeds on the parameters in the Stefan conditions. This is a joint work with Prof. Chiun-Chuan Chen, Dr. Hung-Yu Chien and Prof. Chih-Chiang Huang.